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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|-----------------------|---------------------|------------------|
| 09/896,646 | 06/29/2001 | Roy Thomas Derryberry | NC17148 | 8524 |
| 26349 | 7590 | 10/07/2005 | EXAMINER | |
| JUBIN DANA NOKIA INC. 6000 CONNECTION DRIVE MD 1-4-755 IRVING, TX 75039 | | | TRINH, TAN H | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2684 | |
| DATE MAILED: 10/07/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/896,646 | DERRYBERRY ET AL. |
| | Examiner | Art Unit |
| | TAN TRINH | 2684 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 5-28 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) ____ is/are allowed.
 6) Claim(s) 5-28 is/are rejected.
 7) Claim(s) ____ is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 5-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Foschini (U.S. Patent No. 6763073).

Regarding claim 5, Foschini teaches a method for providing feedback from a mobile station to a base station based on predicted information (see fig. 1, feedback and estimated signal), the method comprising: performing propagation measurements for a plurality of propagation media (see fig. 1, col. 2, lines 27-col. 3, lines 37), estimating a representative value for each of the at least two of the plurality of propagation media based on the propagation measurements (see fig. 1, col. 2, lines 27-col. 3, lines 37, and col. 4, lines 39-col. 5, lines 32), performing prediction of future propagation measurements for each of the plurality of propagation media (see fig. 1, col. 2, lines 27-col. 3, lines 37, and col. 4, lines 39-col. 5, lines 32), and generating the feedback information based on prediction of further propagation measurements (see figs. 1-2, feedback and estimated signal, and col. 3, lines 48- col. 4, lines 47).

Regarding claim 6, Foschini teaches the feedback information to the base station using a feedback channel (see fig. 1-2, col. 4, lines 4-24).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 7-12, 14-19, 21-22, 24-25 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagatani (U.S. Patent No. 20030067904) in view of Gerlach (U.S. Patent No. 5471647).

Regarding claims 7, 14, 21, 24 and 27, Nagatani teaches a method for supporting signal transmission (see figs. 12-14), the method comprising: receiving a first pilot signal transmitted over one of a plurality of distinct channels (see figs. 9-10, page 5, sections [0075-0076]), receiving a second pilot signal transmitted over another one of the distinct channel (see figs. 9-10, page 5, sections [0075-0076]), wherein the first pilot signal and the second pilot signal are identical (see figs. 9-10, page 5, sections [0075-0076]). However, Nagatani teaches the pilot signal are identical on each channels. But Nagatani fails to teach determining weights, corresponding to the channels transporting the signals, based on the received signal; and sending feedback information based on the determined weights to the base station.

However, Gerlach teaches determining weights (see fig. 3a, col. 1, lines 48-67), corresponding to the channels transporting the signals (see fig. 3a, col. 1, lines 48-67), based on the received signal (see col. 3, lines 7-39); and sending feedback information based on the determined weights to the base station (see col. 3, lines 30-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Nagatani system and by the proving of the teaching of Gerlach on the weight and feedback technique so that the system can determined by sequentially existing each transmitting element and measuring the resultant feedback signals and calculate the weight matrix that eliminates the interference of the signals (see Gerlach abstract).

Regarding claims 8 and 15, Nagatani teaches receiving a modulated carrier signal; and demodulating the carrier signal to recover a data stream (see page 1, sections [0003-0004, and 0007]).

Regarding claims 9 and 16, Nagatani teaches modulating a data stream for transmission back to the base station (see page 8-9, section [0123-0126]).

Regarding claims 10 and 17, Gerlach teaches quantizing the weights as the feedback information (see col. 5, lines 23-67).

Regarding claims 11 and 18, the combine of Gerlach and Nagatani teaches the weights and are determined every Power control group (see Nagatani page 9, section [0133]).

Regarding claims 12 and 19, Gerlach teaches wherein the weights are distinct for each channel (see col. 1, lines 23-43).

Regarding claims 22 and 25, Gerlach teaches wherein the weight in the feedback information are utilized to assign antenna weights (see fig. 3a, col. 1, lines 48-67).

Regarding claim 28, Gerlach teaches wherein the weighting values are determined at periodic interval from information obtained from the first signal and the second signal (see fig. 3b, signal 19, col. 6, lines 25-35).

5. Claims 13, 20, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagatani (U.S. Patent No. 20030067904) in view of Gerlach (U.S. Patent No. 5471647) further in view of Foschini (U.S. Patent No. 6763073).

Regarding claims 13, 20, 23 and 26, Gerlach teaches wherein the feedback information is transmission back to the base station (see fig. 3a col. 3, lines 30-56). But Gerlach fails to teach the feedback information is transmission back using feedback channel.

However, Foschini teaches the feedback information is transmission back using feedback channel (see fig. 1, feedback channel).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Nagatani and Gerlach system and by the proving of the teaching on Foschini on the feedback channel technique so that the system can determined by sequentially existing each transmitting element and measuring the resultant feedback signals and calculate the weight matrix that eliminates the interference of the signals (see Gerlach abstract).

Conclusion

6. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(571) 273-8300, (for Technology Center 2600 only)

Hand-delivered responses should be brought to the Customer Service Window (now located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan Trinh whose telephone number is (571) 272-7888. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor, Nay Maung, can be reached at (571) 272-7882.

The fax phone number for the organization where this application or proceeding is assigned is **(571) 273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Technology Center 2600 Customer Service Office** whose telephone number is **(703) 306-0377**.

Art Unit: 2684

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tan H. Trinh
Art Unit 2684
September 26, 2005

9/29/05

TILAHUN GEESSE
PRIMARY EXAMINER